

WE CLAIM:

1. An antimicrobial concentrate composition comprising:  
a combination of peroxyacetic acid and peroxyoctanoic acid effective for killing  
5 *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on  
the surface of a fruit or vegetable;

b1 the combination comprising about 35 to about 45 weight-% acetic acid, about 5 to  
about 15 weight-% octanoic acid, about 3 to about 8 weight-% hydrogen peroxide, about 8 to  
about 16 weight-% peroxyacetic acid, about 1 to about 5 weight-% peroxyoctanoic acid, and  
10 about 0.1 to about 2 weight-% chelating agent.

2. The antimicrobial concentrate composition of claim 1, comprising about 40  
weight-% acetic acid, about 10 weight-% octanoic acid, about 5 weight-% hydrogen  
peroxide, about 12 weight-% peroxyacetic acid, about 3 weight-% peroxyoctanoic acid, and  
15 about 0.6 weight-% chelating agent.

3. An antimicrobial use composition comprising:  
a combination of peroxyacetic acid and peroxyoctanoic acid effective for killing  
18 *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on  
the surface of a fruit or vegetable;

b2 the combination comprising about 10 to about 150 ppm acetic acid, about 5 to about  
40 ppm octanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm  
peroxyacetic acid, about 2 to about 25 ppm peroxyoctanoic acid, and about 0.2 to about 2.5  
25 ppm chelating agent.

4. The antimicrobial use composition of claim 3, comprising about 133 ppm  
acetic acid, about 33 ppm octanoic acid, about 17 ppm hydrogen peroxide, about 40 ppm  
peroxyacetic acid, about 33 ppm peroxyoctanoic acid, and about 2 ppm chelating agent.

- 30 5. The antimicrobial use composition of claim 3, wherein an aqueous flume  
comprises the composition.

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6. An antimicrobial concentrate composition comprising:  
a combination of peroxyacetic acid and peroxyoctanoic acid effective for killing  
*Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on  
the surface of a fruit or vegetable;

the combination comprising an equilibrium mixture resulting from a composition of  
about 50 to about 60 weight-% acetic acid, about 10 to about 20 weight-% octanoic acid,  
about 5 to about 15 weight-% hydrogen peroxide, and about 0.3 to about 1 weight-%  
chelating agent.

7. The antimicrobial concentrate composition of claim 6, comprising an  
equilibrium mixture resulting from a composition of about 54 weight-% acetic acid, about 14  
weight-% octanoic acid, about 10 weight-% hydrogen peroxide, and about 0.6 weight-%  
chelating agent.

8. An antimicrobial concentrate composition comprising:  
a combination of peroxyacetic acid and peroxyoctanoic acid effective for killing  
*Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on  
the surface of a fruit or vegetable;

the combination comprising about 50 to about 60 weight-% acetic acid, about 10 to  
about 20 weight-% octanoic acid, about 5 to about 15 weight-% hydrogen peroxide, and  
about 0.3 to about 1 weight-% chelating agent.

9. The antimicrobial concentrate composition of claim 8, comprising about 54  
weight-% acetic acid, about 10 weight-% hydrogen peroxide, about 0.6 weight-% chelating  
agent, and about 14 weight-% octanoic acid.

10. An antimicrobial use composition comprising:  
food product and a combination of peroxyacetic acid and peroxyoctanoic acid  
effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*,  
yeast, and mold on the surface of a fruit or vegetable;

the combination comprising about 10 to about 150 ppm acetic acid, about 5 to about 40 ppm octanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm peroxyoctanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

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11. The antimicrobial use composition of claim 11, comprising the food product, about 133 ppm acetic acid, about 33 ppm octanoic acid, about 17 ppm hydrogen peroxide, about 40 ppm peroxyacetic acid, about 33 ppm peroxyoctanoic acid, and about 2 ppm chelating agent.

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12. A method of controlling microbial growth in an aqueous stream used for transporting or processing food product, the method comprising:

treating the aqueous stream with a combination of peroxyacetic acid and peroxyoctanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable.

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13. The method of claim 12, wherein the combination comprises about 35 to about 45 weight-% acetic acid, about 5 to about 15 weight-% octanoic acid, about 3 to about 8 weight-% hydrogen peroxide, about 8 to about 16 weight-% peroxyacetic acid, about 1 to about 5 weight-% peroxyoctanoic acid, and about 0.1 to about 2 weight-% chelating agent.

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14. The method of claim 13, wherein the combination comprises about 40 weight-% acetic acid, about 10 weight-% octanoic acid, about 5 weight-% hydrogen peroxide, about 12 weight-% peroxyacetic acid, about 3 weight-% peroxyoctanoic acid, and about 0.6 weight-% chelating agent.

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15. The method of claim 12, wherein treating produces the aqueous stream comprising about 10 to about 150 ppm acetic acid, about 5 to about 40 ppm octanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm peroxyoctanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

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16. The method of claim 15, wherein treating produces the aqueous stream comprising about 133 ppm acetic acid, about 33 ppm octanoic acid, about 17 ppm hydrogen peroxide, about 40 ppm peroxyacetic acid, about 33 ppm peroxyoctanoic acid, and about 2 ppm chelating agent.

17. A method of controlling microbial growth in an aqueous stream used for transporting or processing food product, the method comprising:

administering an antimicrobial concentrate composition to the stream, the antimicrobial concentrate composition comprising an equilibrium mixture resulting from a composition of about 50 to about 60 weight-% acetic acid, about 10 to about 20 weight-% octanoic acid, about 5 to about 15 weight-% hydrogen peroxide, and about 0.3 to about 1 weight-% chelating agent.

18. The method of claim 17, comprising administering to the stream an equilibrium mixture resulting from a composition of about 54 weight-% acetic acid, about 14 weight-% octanoic acid, about 10 weight-% hydrogen peroxide, and about 0.6 weight-% chelating agent.

19. The method of claim 17, wherein administering produces the aqueous stream comprising about 10 to about 150 ppm acetic acid, about 5 to about 40 ppm octanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm peroxyoctanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

20. The method of claim 19, wherein administering produces the aqueous stream comprising about 133 ppm acetic acid, about 33 ppm octanoic acid, about 17 ppm hydrogen peroxide, about 40 ppm peroxyacetic acid, about 33 ppm peroxyoctanoic acid, and about 2 ppm chelating agent.

21. A method of controlling microbial growth in an aqueous stream used for transporting or processing food product, the method comprising:

producing the aqueous stream comprising about 10 to about 150 ppm acetic acid, about 5 to about 40 ppm octanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm peroxyoctanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

22. The method of claim 21, wherein the aqueous stream comprises about 133 ppm acetic acid, about 33 ppm octanoic acid, about 17 ppm hydrogen peroxide, about 40 ppm peroxyacetic acid, about 33 ppm peroxyoctanoic acid, and about 2 ppm chelating agent.

23. An antimicrobial concentrate composition comprising:  
a combination of peroxyacetic acid and peroxyseptanoic or peroxy-nonanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable;

the combination comprising about 35 to about 45 weight-% acetic acid, about 5 to about 15 weight-% septanoic or nonanoic acid, about 3 to about 8 weight-% hydrogen peroxide, about 8 to about 16 weight-% peroxyacetic acid, about 1 to about 5 weight-% peroxyseptanoic or peroxy-nonanoic acid, and about 0.1 to about 2 weight-% chelating agent.

24. An antimicrobial use composition comprising:  
a combination of peroxyacetic acid and peroxyseptanoic or peroxy-nonanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable;

the combination comprising about 10 to about 150 ppm acetic acid, about 5 to about 40 ppm septanoic or nonanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm peroxyseptanoic or peroxy-nonanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

25. An antimicrobial concentrate composition comprising:

a combination of peroxyacetic acid and peroxyseptanoic or peroxy-nonanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable;

the combination comprising an equilibrium mixture resulting from a composition of about 50 to about 60 weight-% acetic acid, about 10 to about 20 weight-% septanoic or nonanoic acid, about 5 to about 15 weight-% hydrogen peroxide, and about 0.3 to about 1 weight-% chelating agent.

26. An antimicrobial concentrate composition comprising:

a combination of peroxyacetic acid and peroxyseptanoic or peroxy-nonanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable;

the combination comprising about 50 to about 60 weight-% acetic acid, about 10 to about 20 weight-% septanoic or nonanoic acid, about 5 to about 15 weight-% hydrogen peroxide, and about 0.3 to about 1 weight-% chelating agent.

27. An antimicrobial use composition comprising:

food product and a combination of peroxyacetic acid and peroxyseptanoic or peroxy-nonanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable;

the combination comprising about 10 to about 150 ppm acetic acid, about 5 to about 40 ppm septanoic or nonanoic acid, about 4 to about 20 ppm hydrogen peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm peroxyseptanoic or peroxy-nonanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

28. A method of controlling microbial growth in an aqueous stream used for transporting or processing food product, the method comprising:

treating the aqueous stream with a combination of peroxyacetic acid and peroxyseptanoic or peroxy-nonanoic acid effective for killing *Escherichia coli* O157:H7, *Listeria monocytogenes*, *Salmonella javiana*, yeast, and mold on the surface of a fruit or vegetable.

29. A method of controlling microbial growth in an aqueous stream used for transporting or processing food product, the method comprising:

administering an antimicrobial concentrate composition to the stream, the  
5 antimicrobial concentrate composition comprising an equilibrium mixture resulting from a composition of about 50 to about 60 weight-% acetic acid, about 10 to about 20 weight-% septanoic or nonanoic acid, about 5 to about 15 weight-% hydrogen peroxide, and about 0.3 to about 1 weight-% chelating agent.

10 30. A method of controlling microbial growth in an aqueous stream used for transporting or processing food product, the method comprising:

producing the aqueous stream comprising about 10 to about 150 ppm acetic acid,  
about 5 to about 40 ppm septanoic or nonanoic acid, about 4 to about 20 ppm hydrogen  
peroxide, about 5 to about 50 ppm peroxyacetic acid, about 2 to about 25 ppm  
15 peroxyseptanoic or peroxyonanoic acid, and about 0.2 to about 2.5 ppm chelating agent.

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